VANGUARD 2005
Force Health Protection Capabilities Symposium

Draft Final Report

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NWDC N55
15 March 2006

Background

- The VANGUARD Medical Science and Technology Wargame concept was developed in 1996 to serve as a forum for identifying science and technology gaps that would drive future medical research and development efforts.
- The 2005 VANGUARD symposium was held 7-10 November at the Naval War College (NWC), Newport, RI, sponsored by the Naval Bureau of Medicine and Surgery (BUMED, MED-53).
- It brought together representatives of Navy and Marine Corps Senior Operational Leadership, in association with leaders from service headquarters, to prioritize the capabilities needed to support the pillars of the functional concept of Naval Force Health Protection for the 21st Century (NFHP-21) between 2008 and 2013 across the range of military operations.

Participating Commands

- **The Medical Officer of the Marine Corps**
- **Fleet Forces Command**
- **Marine Corps Combat Development Command**
- **Marine Corps Systems Command**
- **Naval Air Systems Command**
- **Naval Sea Systems Command**
- **Naval Operational Medicine Institute**
- **Navy Medical Resources, Plans and Policy (N931)**
- **Naval Medical Logistics Command**
- **Bureau of Medicine and Surgery (MED-53)**
- **Navy Warfare Development Command**

85 participants in VANGUARD 2005

Outline

- **Symposium Objective and Mechanics**
- **Capability Gaps Identified**
- **DOTMLPF Analysis of Capability Gaps**

- Symposium conducted 07-10 November 2

- 11 Principal Capability Gaps were identifi

- Spectrum of scenarios analyzed:

A. Major Combat Operations (MCO)
B. Show of Force (SHOF)
C. Foreign Humanitarian Assistance (FH

Outline

- **Symposium Objective and Mechanics**
- **Capability Gaps Identified**
- **DOTMLPF Analysis of Capability Gaps**
- **Summary and Recommendations**

Symposium Objective

- **Identify and prioritize the Capability Gaps needed to support Force Health Protection between 2008 and 2013 across the full spectrum of Doctrine, Organization, Training, Materiel, Leadership, Personnel, and Facilities (DOTMLPF)**

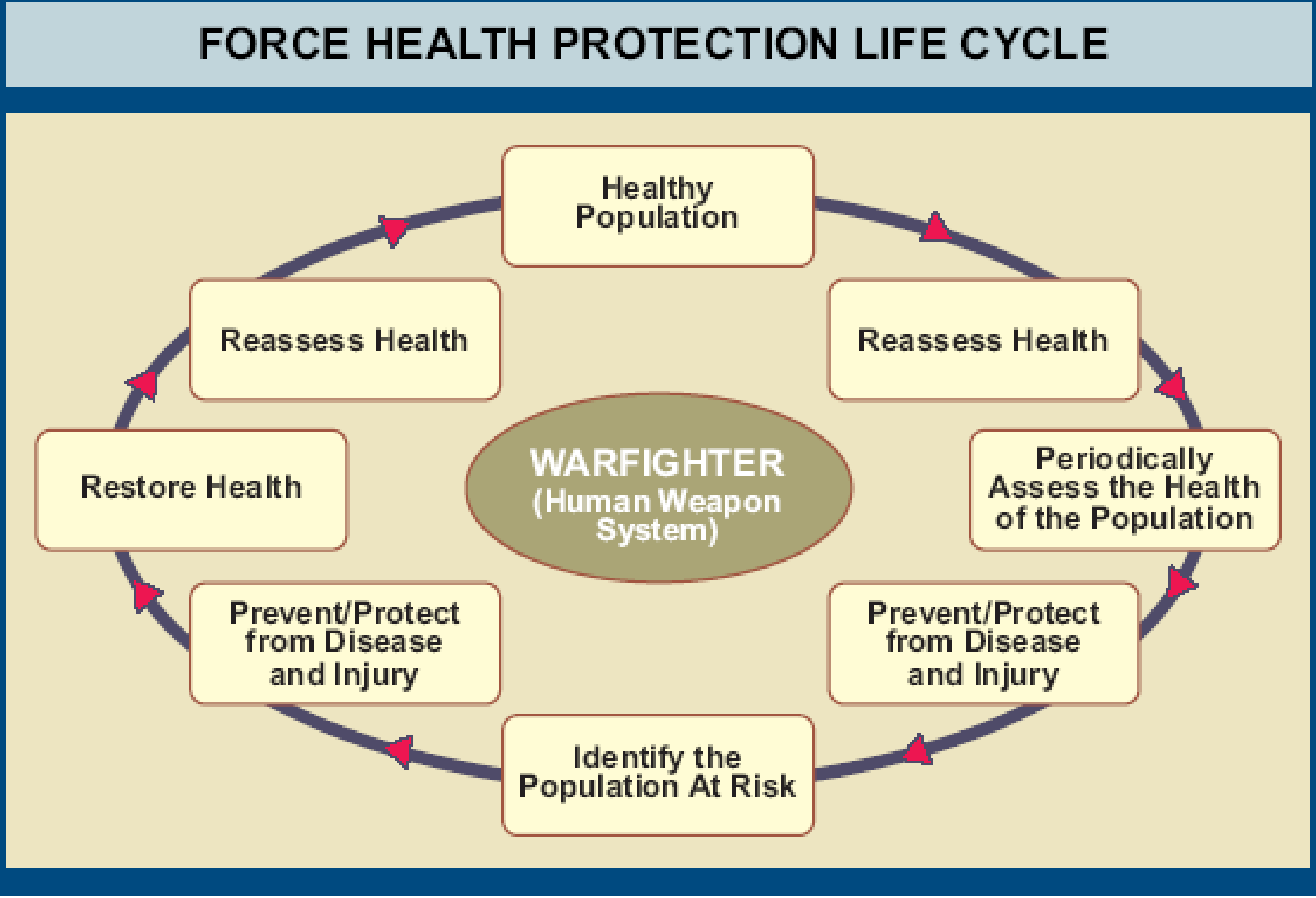

Figure I-1. Force Health Protection Life Cycle

FORCE HEALTH PROTECTION PILLARS

HEALTHY & FIT FORCE

- Periodic Health Assessment
- Individual Medical Readiness
- Health Promotion
- Stress Management
- Pre/Post Deployment Health Assessment

PREVENTION & PROTECTION

- Immunizations & Countermeasures
- Safe & Healthy Working Conditions
- Protective Equipment
- Assess/Mitigate Hazards
- Health & Environmental Surveillance
- Risk Communication

TAXONOMY OF CARE

- Scalable, Modular, Joint Medical Capabilities
- First Responder
- Forward Resucsciative Care
- Theater Hospitalization
- En Route Care
- Definitive Care

JOINT CENTERED, BALANCED APPROACH: PREVENTIVE AND CURATIVE

NFHP-21 Pillar 1
Healthy and Fit Force

- Health Promotion
- Physical Fitness
- Stress Management
- Individual Medical Readiness
- Risk Communication
- Safe & Healthy Working Conditions

NFHP-21 Pillar 2 Prevention and Protection

- Assess/Mitigate Hazards
- Immunizations
- Preventive Medicine initiatives
- Personal Protective Equipment and countermeasures
- Health & Environmental Surveillance
- Pre/Post Deployment Health Assessment

NFHP-21 Pillar 3 Casualty Care and Management (Taxonomy of Care)

- First Responder
- Forward Medical Care and Surgery
- Theater Medical Care and Hospitalization
- En route Care
- Care Outside the Theater/Definitive Care

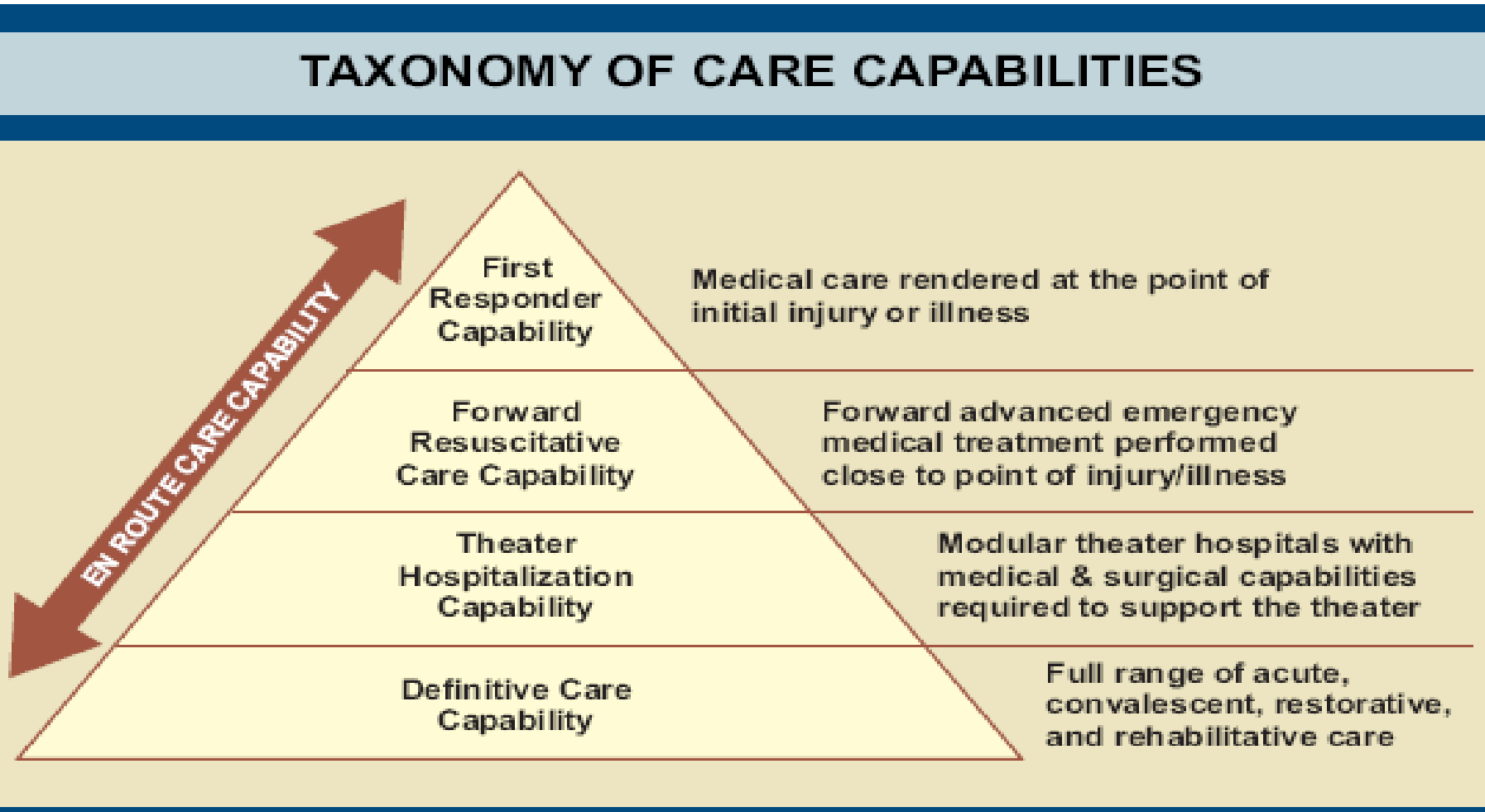
TAXONOMY OF CARE CAPABILITIES
EN ROUTE CARE CAPABILITY
First Responder Capability
Medical care rendered at the point of initial injury or illness
Forward Resuscitative Care Capability
Forward advanced emergency medical treatment performed close to point of injury/illness
Theater Hospitalization Capability
Modular theater hospitals with medical & surgical capabilities required to support the theater
Definitive Care Capability
Full range of acute, convalescent, restorative, and rehabilitative care

Figure I-2. Taxonomy of Care Capabilities

Symposium mechanics
Working Groups

- Symposium divided into 3 working groups (A/B/C) of approximately 28 persons.
- Each working group was given a different operational scenario used to facilitate the discovery process.
- Each working group had a team assigned to assist with the scenario and HSS discovery interaction:
  - Moderator: NWC wargaming staff
  - Facilitator: NWDC medical staff
  - Recorder: BUMED R&D staff
- Each Working Group had a Senior participant designated as spokesperson and briefer.

Working Group A Scenario

- Major Combat Operations (MCO)
  - The process of carrying on combat, including movement, supply, attack, defense, and maneuvers needed to gain the objectives of any battle or campaign.

Working Group B Scenario

- Show of Force (SHOF)
  - An operation designed to demonstrate US resolve that involves increased visibility of US deployed forces in an attempt to defuse a specific situation that, if allowed to continue, may be detrimental to US interests or national objectives.

Working Group C Scenario

- Foreign Humanitarian Assistance (FHA)
  - Programs conducted to relieve or reduce the results of natural or manmade disasters or other endemic conditions such as human pain, disease, hunger, or privation that might present a serious threat to life or that can result in great damage to or loss of property.
  - Foreign humanitarian assistance (FHA) provided by US forces is limited in scope and duration. The foreign assistance provided is designed to supplement or complement the efforts of the host nation civil authorities or agencies that may have the primary responsibility for providing FHA.
  - FHA operations are those conducted outside the United States, its territories, and possessions.

Symposium mechanics
Functional Capability Cells

- Each working group was further subdivided into 6 FCCs of 4-6 persons that had different focus areas across the 3 pillars of NFHP-21.
- Within the FCC, 2 participants were identified by COB on day 1 to serve as voting members for prioritization of capabilities on the last day of the exercise. A third person was authorized to observe as a non-voting member
- Each FCC addressed perceived capability gaps in future HSS across the spectrum of DOTMLPF as facilitated by the operational scenario.
- The capability gaps were captured in a synchronization matrix that addressed HSS issues throughout the lifecycle of a deployment, from routine operational medicine through phase IV Ops.

Functional Capability Cells (FCCs)

- Medical Command and Control
- Medical Logistics and Infrastructure
- Patient Movement
- Enhanced Human Performance
- Battlespace Medicine and Surgery
- Preventive Medicine, Medical Intelligence, and Surveillance

Symposium mechanics
Scenario Operational Phases

- Once working groups and FCCs were oriented, they were tasked with analyzing their assigned scenarios sequentially, beginning with an assessment of HSS capability gaps for routine military operational medicine.
- Each day focussed on different elements of HSS across the life cycle of an extended expeditionary campaign or operation.

Symposium Mechanics Scenario Operational Phases

- Pre-phase I: Routine military operational medicine
- Phase I: Planning and preparation for deployment
- Phase II: Deployment to the AO/JRSOI aboard the SEABASE
- Phase III: Decisive Operations
- Phase IV: Transition/SASO, Re-deployment, and re-entry into Pre-phase I

Symposium Mechanics
Use of the synchronization matrix

- To provide a framework for identification of sequential HSS future capabilities, each FCC used a synchronization matrix as a tool to analyze the HSS elements required for the pillars of NFHP-21 in each phase of their scenario.
- Identification of anticipated capability gaps was captured daily for each FCC for each NFHP-21 pillar.

Scenario A MCO
Medical C2 FCC
Healthy and Fit Force Synchronization matrix

	Pre-Phase I Military OP MED	Phase I Prep for deployment	Phase II Deployment JRSOI	Phase III Decisive Ops CCC, Evac	Phase IV Transition, SASO, re-deployment
Health Promotion					
Physical Fitness					
Stress Management					
Risk Commun-ication					
Safe & Healthy Working Conditions					
IMR					

Assess HSS Capabilities needed for each Phase

- Given the risks discussed what health service support capabilities could be provided to our Sailors and Marines as they conduct operations in theater that are not being provided today to address those risks?
- Group ideas into the same categories.

Symposium Guidance

- At the conclusion of day 3, each WG briefed a synopsis of the major issues identified for their FCCs based on their scenario.
- The individuals identified to participate in the “rack and stack” process in the Decision Support Center on Day 4 will be oriented as to the subsequent process.

Terminology for Operators

- **Capability:** The ability to achieve a desired effect under specified standards and conditions through combinations of means and ways to perform a set of tasks.
- **Task:** An action or activity (derived from an analysis of the mission and concept of operations) assigned to an individual or organization to provide a capability.
- **Standard:** Quantitative or qualitative measures for [specifying] the levels of performance of a task.
- **Condition:** Variable of the operational environment including scenario that affects task performance.
- **CONOPS:** The overall picture and broad flow of tasks assigned to subordinates/supporting entities within a plan by which a commander maps capabilities to effects to accomplish the mission for a specific scenario.
- **Effect:** A change to a condition, behavior, or degree of freedom.
- **Endstate:** The set of conditions, behaviors, and freedoms that defines achievement of the commander's mission.
- **Mission:** The purpose (objectives and endstate) and tasks assigned to a commander.
- **Measure:** Provides the basis for describing varying levels of task performance.

Source: MORS Conf Oct 2004 / CJCSM

Definitions

- Capability Gap - The inability to achieve a desired effect under specified standards and conditions through combinations of means and ways to perform a set of tasks. The gap may be the result of no existing capability or lack of proficiency or sufficiency in existing capability.

Monday, 7 November

0800-0900 Check-In and Continental Breakfast
0900-0945 Welcome and Background Briefs
0945-1000 Break
1000-1130 Group Discussion: Pre-Phase I, Phase I
1130-1230 Lunch
1230-1430 Group Discussion: Pre-Phase I, Phase I
1430-1445 Break
1445-1630 Group Discussion: Phase II

Tuesday, 8 November

0730-0800 Continental Breakfast
0800-1015 Group Discussion: Phase II
1015-1030 Break
1030-1130 Group Discussion: Phase III
1130-1230 Lunch
1230-1600 Group Discussion: Phase III

Wednesday, 9 November

0730-0800 Continental Breakfast
0800-1130 Group Discussion: Phase IV
1130-1230 Lunch
1230-1330 Group Discussion: Phase IV
1330-1415 Interim WG Synopsis Preparation
1415-1430 Break
1430-1515 Plenary Session: WG Synopsis
1530-1700 Final WG Brief Preparation Time

Thursday, 10 November
Master Voting Session

0730-0900 Group A Brief Out/Prioritization
0090-1030 Group B Brief Out/Prioritization
1030-1200 Group C Brief Out/Prioritization

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- **Symposium Objective and Mechanics**
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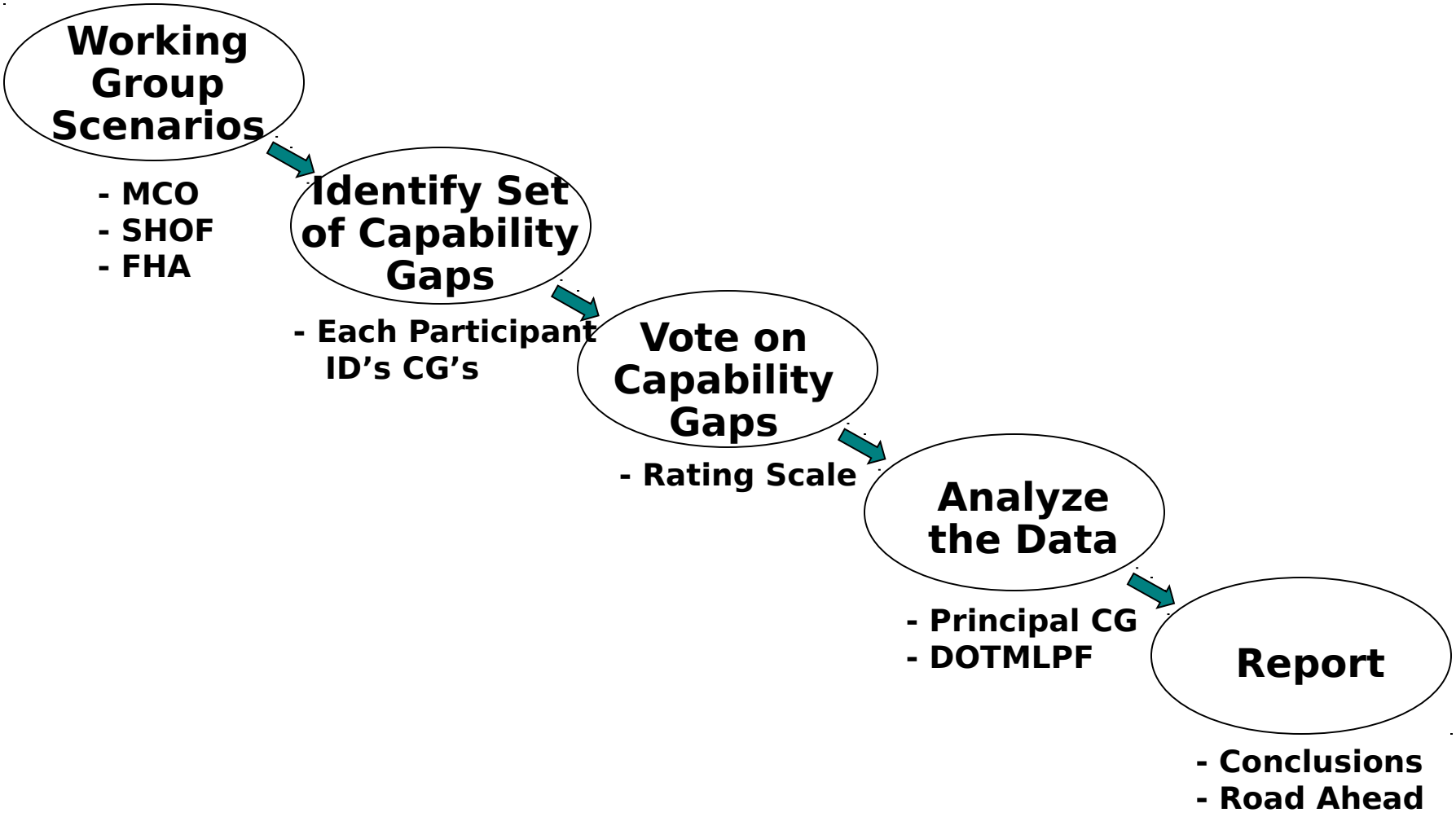
Post-Symposium DCAP

- The DCAP for VANGUARD 2005 was devised by staff analysts from NWDC in the Operations and Doctrine Departments.
- The DCAP utilized the data that was captured in the Master Voting Report provided by the CNWS staff from the voting session on the last day of the Symposium.

Process Schematic



Master Voting Report

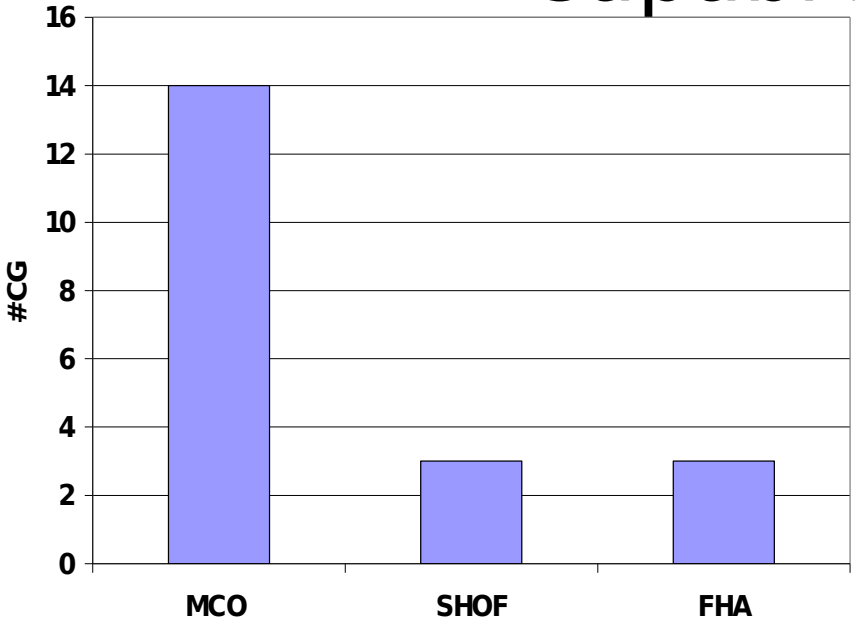
- The rating-scale average/mean (measure of central tendency) and standard deviation (measure of dispersion/spread) were calculated for each of the 257 CGs.
- The standard deviations were not used in our analysis, but are reported later for potential use as an indicator of the participant agreement or disagreement on the importance of each CG.
- The data from the Master Voting Report were captured in 9 spreadsheets corresponding to the three NFHP-21 pillars for each of the three WGs and can be viewed in Appendices D, E, and F of the draft final report.
- Amplifying comments by participants during the briefing potions of the master voting session were captured electronically and are attached as Appendix G.

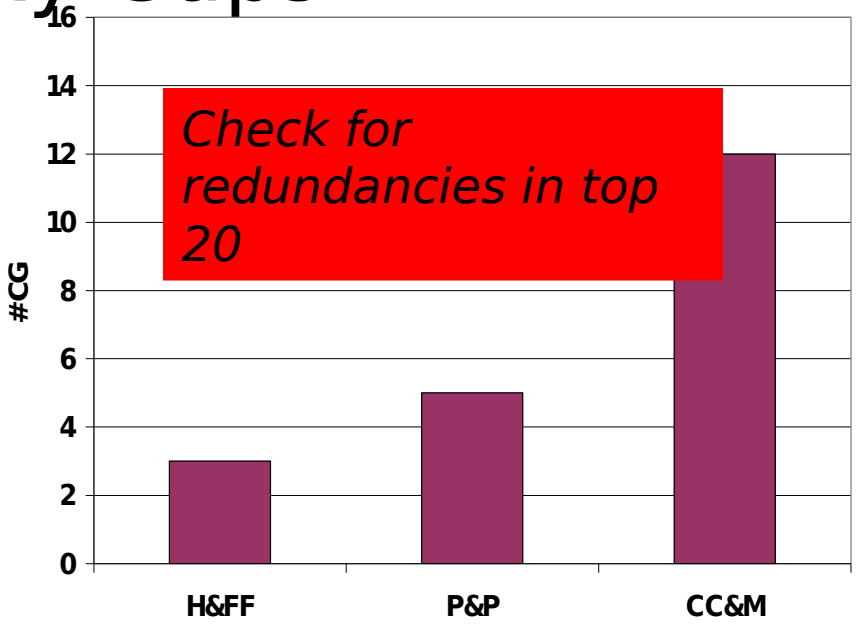
	WG A (MCO) Potential Capability Gaps_____	Avg	Voters	SD
1	Identify, with high accuracy, people with deployment- limiting conditions before deployment	**3.3**	**36**	**0.8**
2	Provide medical force surge capacity	**3.3**	**36**	**0.9**
3	Provide medical personnel mission-specific team processes, equipment, and training	**3.2**	**36**	**0.9**
4	Identify personnel to be assigned & trained for the patient movement mission	**3.0**	**36**	**1.0**
5	Provide warfighters with adequate shelters, clothing and equipment	**3.0**	**32**	**1.1**
6	Provide pre-deployment physical and psychological screening	**2.9**	**36**	**0.9**
7	Ensure adequate combat stress preparation by dedicated mental health teams for deployed and deploying forces (i.e.OSCAR model)	**2.8**	**36**	**0.8**
8	Enhance physical & mental conditioning appropriate to AOR (cold, altitude)	**2.8**	**36**	**1.0**
9	Improved product location tools for in transit-visibility	**2.8**	**35**	**0.9**
10	Ensure personnel are trained to use patient evacuation equipment in a global MAP environment	**2.8**	**35**	**1.0**
11	Provide screening/preparation for attrition & combat replacements equivalent to initial deployers	**2.7**	**36**	**1.0**
12	Ensure risk communication guided by ongoing health surveillance data	**2.6**	**36**	**0.8**
13	Comprehensively track and deliver needed healthcare not available in theater and subsequent longitudinal care delivery	**2.6**	**36**	**0.9**
14	Define draw-down capabilities needed: US Forces	**2.6**	**34**	**0.9**
15	Improved product identification tools (RFID)	**2.5**	**34**	**1.0**
1	Develop integrated culture of wellness and health promotion	**2.4**	**36**	**0.**

Principal Capability Gaps

- The overarching theme articulated during the Symposium was the need to enhance the HSS contribution to the Common Operating Picture across the board for Navy Medicine as a corporate entity.
- The CGs were then rank ordered by mean score and a threshold was used to segregate the “Top 20”. The threshold turned out to be >/= 3.3 on a scale of 1 to 4.
- The DCAP WG met over several sessions to distill and articulate the Principal CGs. Redundancy in wording and grouping of like items reduced the “Top 20” to 11 items.
- Meeting over several sessions and after robust discussion and debate, the DCAP WG designated 11 Principal CGs. The use of accepted joint terminology was used whenever possible.

MCO and CCM Dominate the Top 20 Capability Gaps





Top 20 are >/= 3.3 out of 4

	H&FF	P&P	CC&M
A. MCO	22	23	44
B. SHOF	26	28	42
C. FHA	14	24	34

CCM > PAP > HAFF across all scenarios
CCM >> either PAP or HAFF across all scenarios

11 Principal Capability Gaps Identified

A capability gap exists in that Navy Medicine cannot fully achieve the desired effect of…

- **Providing effective C2 across the continuum of care.**
- **Training and equipping sailors and marines to deliver first responder care/advanced first aid across the Fleet.**
- **Managing an integrated patient care movement and evacuation system that can rapidly move large numbers of casualties.**
- **Utilizing a common interoperable Medical Readiness Reporting Tool (individual & unit) that can identify, with high accuracy, people with deployment-limiting conditions.**
- **Integrating medical operational plans that fully incorporate Joint, Coalition, and NGO/PVO assets.**
- **Providing long range patient evacuation to and from the sea base.**
- **Providing enhanced forward and distributive resuscitative care.**
- **Fielding scalable, interoperable, and modular medical support systems.**
- **Effectively conduct HSS in FHA operations.**
- **Providing medical force surge capacity.**
- **Adequately supporting Fleet requirements for appropriate**

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DOTMLPF Analysis

Doctrine

Organizatio
n

Training

Material

Leadership

Personnel

Facilities

DOTMLPF Analysis
Doctrine

Currently, Navy Medicine does not have the **D**octrinal capability to fully manage, implement, or validate:

- Theatre-wide command and control capability or a common operating picture throughout the taxonomy of care to include patient movement or medical readiness systems.
- Enhanced forward resuscitative care, advanced triage and diagnostic care.
- CASEVAC/MEDEVAC/ENROUTE CARE for each phase of an operation, to include the sea base.
- Medical force surge capacity and "Quick Reaction Force" surge capacity.
- CONOPS for T-AH employment.
- Transition of USN HSS responsibilities to NGO, IGO, HN, and other government organizations.
- HSS of detainees on the sea base.
- Expeditionary, scalable, interoperable, modular medical support systems.
- HSS for FHA and stability operations
- Scalable plug & play capability for medical care in sea based platform

DOTMLPF Analysis Organization

Currently, Navy Medicine does not have the **O**rganizational capability to fully manage, implement, or validate:

- Provide medical force surge capacity to support the Sea Base and ships in AO with specialists required to support FHA, surge requirements for ICU Care (Critical Care Nursing; eICU Monitoring)
- Develop a task organized unit, rapidly sourced with personnel of specific skill sets, knowledge and availability (include reserves) to provide specialized expertise.
- Provide medical "Quick Reaction Force, within 48 hours
- Manage an integrated patient movement/evacuation system able to clear the Seabase.
- Develop a NAVFOR/JFMCC command and control capability
- Resolve Navy Medicine Force Structure issues.
- Manage or jointly integrate in-country distribution and transportation for Class VIIIA and Class VIIIB.
- Source and align the ability to identify and track the health of the force.
- Provide operationally trained and experienced health care professionals.

DOTMLPF Analysis
Training

Currently, Navy Medicine does not have the **T**raining capability to fully manage, implement, or validate:

- Operational medicine positions and career pathways for a wider cadre of operationally experienced HSS professionals.
- Technological training deficiencies include using HSS technology to support timely decision making, maintaining visibility of patient movement assets, interoperability of disparate communications.
- Identify and treat operational psychological conditions of the service member and their families.
- Train members to develop and maintain the HSS portion of the COP.
- Surveillance, analysis, and mitigation using evidence-based methodologies, which correlate health conditions with deployment related exposures and stress.
- Force Protection for deployed HSS personnel and units.
- Logistical support, including providing a seamless support continuum throughout the phases of the operation to include service and joint logistics capabilities.
- Operational forces to deliver First Responder Care.

DOTMLPF Analysis
Training

Currently, Navy Medicine does not have the **T**raining capability to fully manage, implement, or validate:

- Patient movement items.
- SAMS, MRRS, AHLTA
- Identification of deployment-limiting conditions.
- AOR medical cultural awareness and communication.
- Joint, coalition, and interagency coordination and collaboration.
- HSS for detainees
- Planning and functioning at the OPERATIONAL level of warfare.
- Standardized En Route Care, from CASEVAC throughout the continuum of care.
- Cross training of Radiology Technicians in other imaging modalities.
- Adapting MTF skill sets to the operational environment across the continuum of care.
- Maintain critical skills during sustained operations
- Blood banking capabilities, including tracking recipients of non-FDA licensed blood products.
- Mission specific training in support of medical individual "Quick Reaction Force" surge capacity.

DOTMLPF Analysis Material

Currently, Navy Medicine does not have the **M**aterial capability to fully manage, implement, and validate:

- Material solutions for the management of intra-thoracic, abdominal, and intra-cranial hemorrhage; orthopedic conditions; elevated intra-cranial pressure; hypothermia; and tissue regeneration across the continuum of care.
- Sustain and accelerate recovery time by using prophylaxis and therapeutic products in extreme environments.
- A forward surgical capability that is integrated into its own vehicle and shelter system.
- A portable, limited, isolation capability that can be established ashore or on the Sea Base.
- Tools/resources for self/buddy care training.
- Capability to relocate resuscitative surgery capabilities from platform to platform based on the composition of the sea base.
- Advanced, portable, and scalable, diagnostic, triage and forward surgical care equipment.
- Procure materials to support Single Integrated Medical Logistics Manager (SIMLM), and Theater Lead Agent Medical Material (TLAMM).
- Standardized, portable, power sources and oxygen generation systems that have a plug and play compatibility with the various platforms constituting the Sea Base.
- In-transit and in-theater distribution tracking of medical/HSS supplies, to include blood/plasma supplies.

DOTMLPF Analysis Material

Currently, Navy Medicine does not have the **M**aterial capability to fully manage, implement, and validate:

- AOR and mission specific authorized medical allowance lists.
- Support the "Walking Blood Bank"
- Deployable, ashore or afloat, telemedicine capability for austere environments with global reach.
- Mitigate the consequences of environmental extremes (temperature, geography and altitude).
- A Sea Based confirmatory testing laboratory.
- Reliable methodology to correlate health conditions with deployment related exposure and stress.
- Rapid screening and testing for communicable diseases.
- A portable, ashore and afloat, plug and play physiological monitoring capability with global connectivity.
- Mission specific development of personal protective equipment (PPE).
- An automated, standardized, interoperable and deployable medical support and readiness system, that identifies, analyze and tracks the actual health of the force and provides relevant metrics, and disseminate outcomes-based healthcare data.
- A common, interoperable medical readiness reporting tool (individual and unit).
- A rapid, waterborne, capability to MEDEVAC patients to and from the Sea Base.

DOTMLPF Analysis
Leadership

Currently Navy Medicine does not have the **L**eadership capability to fully manage, implement, and validate:

- Task organization of existing HSS assets to meet emerging missions or the transition through stabilization and redeployment operations
- Positioning and appropriate allocation of the T-AH platforms.
- HSS "quick reaction force”.
- HSS Surge capability
- Standing Medical C2 cells.
- Enhanced forward resuscitative care, advanced triage and diagnostic care.
- Rules of care in FHA and stability operations.
- Scalable, interoperable, modular medical support systems, afloat and ashore.
- Patient evacuation to and from the sea base.
- The utilization and continued development of fleet lead initiatives for Personal Protective Material and Equipment.
- Operational Risk Management.
- Effective deployment health surveillance
- Develop a functional health based concept for HSS
- Rapidly communicate changes to established plans across all affected organizations
- Develop a medical concept of operations, which includes coordinated and when appropriate integrated actions/efforts with OGA, IGO, and NGO, for support to FHA, DR, and stability operations

DOTMLPF Analysis
Personnel

Currently Navy Medicine does not have the **P**ersonnel capability to fully manage, implement, and validate:

- An ability to surge specific skill sets for a medical quick reaction force, ashore or afloat, required to support operations across the range of military operations.
- An ability to surge specific skill sets (personnel) to provide required services, ashore or afloat, in crisis situations.
- JFMCC/NAVFOR HSS component.
- Sufficient, trained, personnel to support the medical/HSS liaison requirements .
- HSS and medical providers trained to conduct operational planning and interagency coordination.

DOTMLPF Analysis
Facilities

Currently Navy Medicine does not have the **F**acilities capability to fully manage, implement, and validate:

- Scaleable, deployable, clinical facilities with the ability to be established on any designated USN platform.
- Scaleable, deployable, isolation capability to support HSS/MEDEVAC operations aboard USN platforms.

Outline

- **Symposium Objective and Mechanics**
- **Capability Gaps Identified**
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- **Summary and Recommendations**

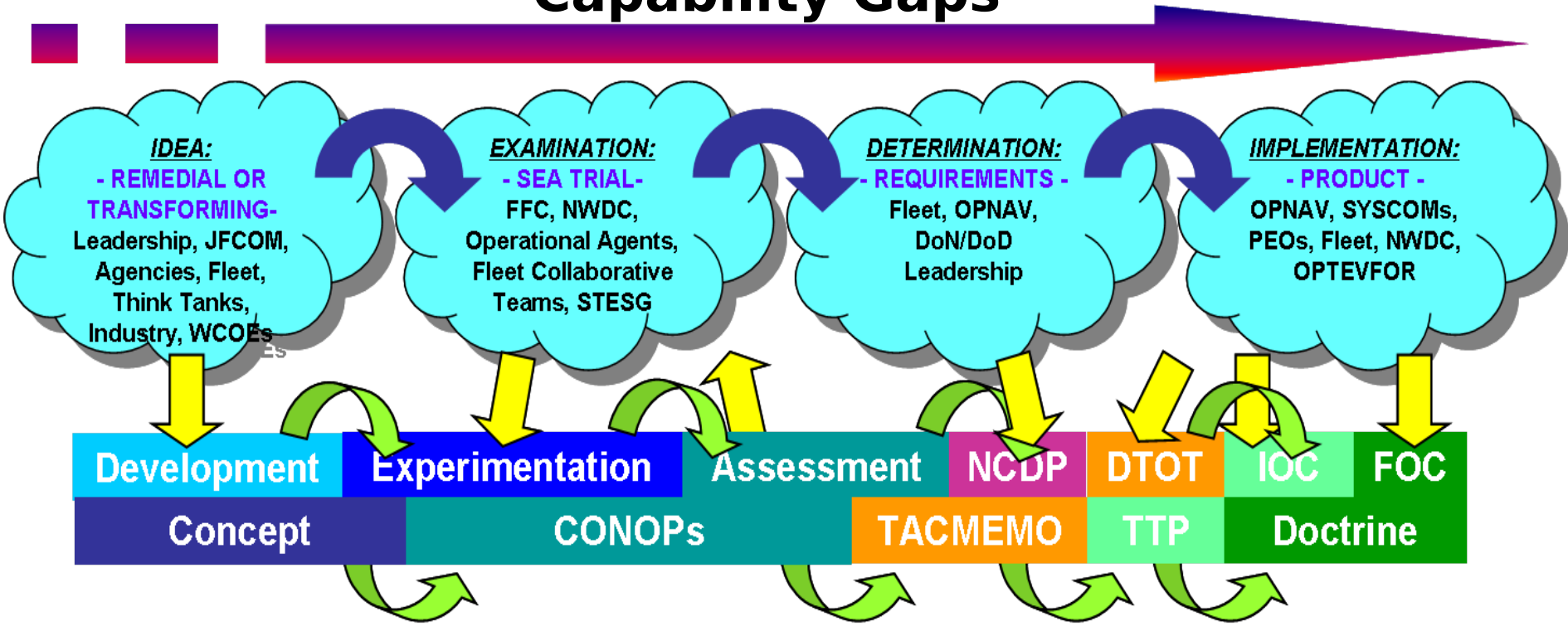
Summary

- The participants clearly felt that Navy Medicine is doing an outstanding job in supporting current ongoing military operations.
- The rapid evolution of technology, the need to adapt our tactics, techniques and procedures to meet emerging threats and missions, the impetus for transformation within DOD and Navy Medicine, and the realities of resource constraints, all contribute to the challenges faced by stakeholders attempting to recapitalize our HSS capabilities to maintain the excellent level of support provided.
- Proposed CGs within the report were developed in the spirit of commitment to affirmative process improvement.
- Chief amongst these concerns was the need to keep pace with the demand signals for timely and pertinent information to support the HSS portion of the COP.

Recommendations

- The intent of VANGUARD 2005 was not to provide solutions, but to identify areas that will require further analysis and development.
- It is recommended that the 257 rank-ordered items, principal capability gaps, and DOTMLPF CGs, be considered by commands and agencies within Navy Medicine that can perform Functional Needs Analysis (FNA) and Functional Solutions Analysis (FSA) to determine the need for further development.
- The results may also be used as appropriate to effect solutions within those commands that have oversight of DOTMLPF areas.
- As the Symposium sponsor, BUMED MED-53 will track the status of items recommended for further action.
- A future VANGUARD Symposium should be held in FY 08 to review the status of action items and reconsider the capabilities needed to support NFHP-21.

Developmental Pathways for DOTMLPF Material and Non-material Solutions to Warfighting Capability Gaps



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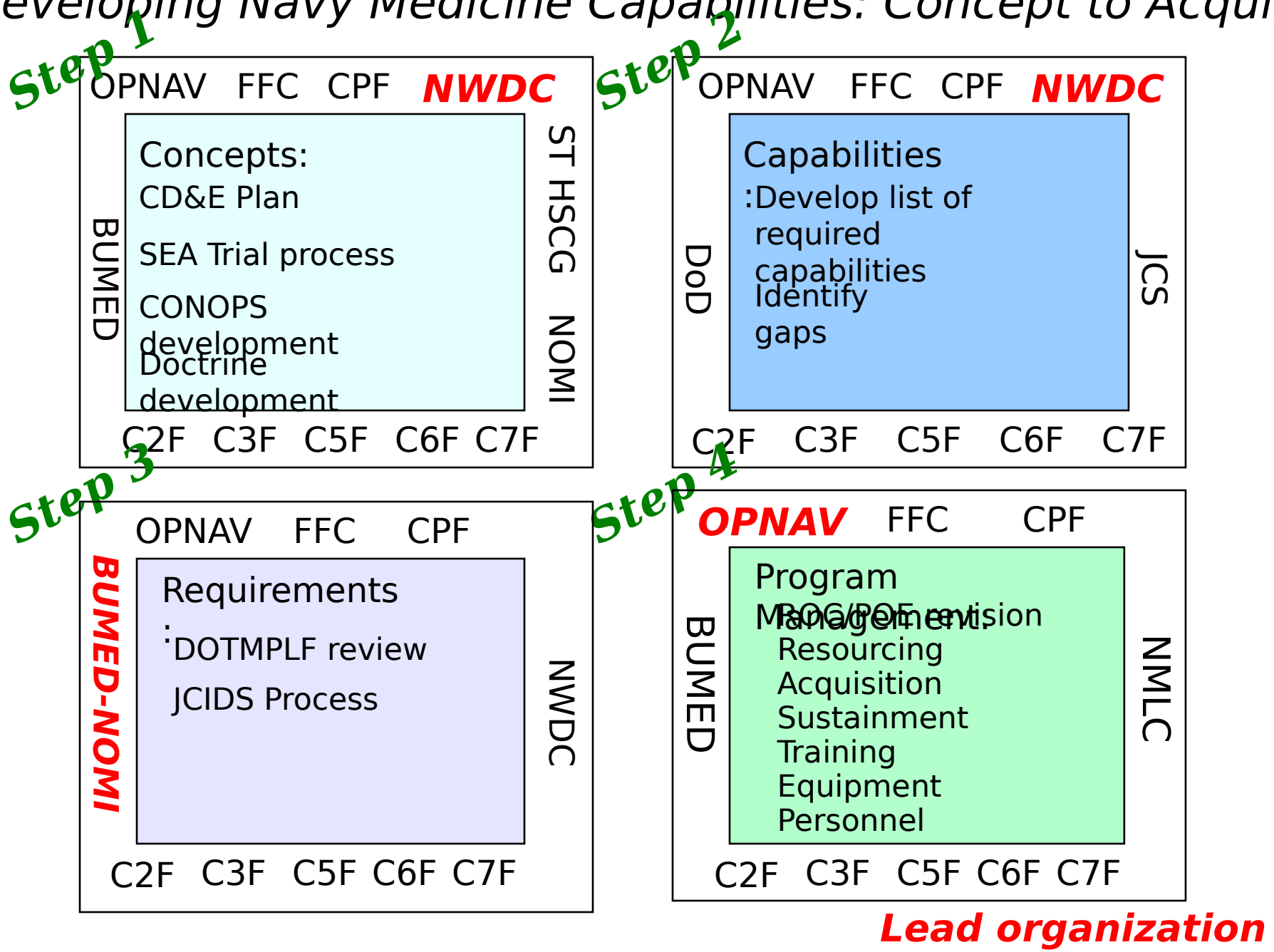

“I fear that the output of this war game will end up as just another list of good ideas.

The real work is yet to come: the

DOTMLPF analysis of the capability gaps

we identified, i.e. the combat development process.”

VANGUARD 2005

Force Health Protection Capabilities Symposium

NAVY MEDICINE

World Class Care…Anytime, Anywhere

Questions?